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1885 President of the American Chemical Society, will be pleased to note the accurate forecast of his character made by Wöhler fifty years before. Booth, however, did not go to Sweden, as Berzelius replied he was too old to take charge of any students.

The reviewer can give but a birdseye survey of the extraordinary value of these volumes as contributions to the history of chemistry. An index of proper names adds to their usefulness.

HENRY CARRINGTON BOLTON.

Reports of the Cambridge Anthropological Expedition to Torres Straits, Volume II. Physiology and Psychology. Part I. 'Introduction and Vision.' Cambridge, The University Press. 1901. 4to. Pp. 140.

The inclusion of psychological tests in the anthropological survey of the status of primitive peoples is a noteworthy tendency of recent investigation, and one worthy of the highest commendation. No more interesting contribution of this nature has been made than the one just published by the Cambridge expedition, the general director of which is Mr. A. C. Haddon. The psychological observations are due to W. H. R. Rivers. While many of the observations are rather undeveloped in type and made under unfavorable conditions, yet the whole research embodies a considerable amount of material that is suggestive even where it fails to be conclusive. Mr. Rivers is entitled to great credit for the inauguration and the successful completion of this series of tests.

The direction of such an enterprise involves great tact, a constant watchfulness for sources of error, encounter with difficulties of language and the explanation of what was wanted. The men had to be given tobacco and the children sweets as rewards of merit for having their eyesight tested, while at the same time an appeal to their vanity was very efficacious. The story was circulated that the black man could see and hear better than the white man, and that the white man had come to see whether this was so and would record the results in a big book for all to read. An overzealous native, in impressing the necessity of

truthfulness in answering the questions asked, had hinted that Queen Victoria would send a man-of-war to punish those who told lies, and so frightened off a group of subjects altogether. But on the whole, Mr. Rivers presents satisfactory evidences that the natives understood what was desired and were able to give proper attention to the test.

Only a few of the more significant results can here be presented in outline. Visual acuity was tested in several ways, the best being by the use of the letter E in various positions (Snellen's Haken). This character was presented in various sizes and arrangements and the subject required to hold a sample character, which he had in his hand, in the position of a given character exhibited at a standard distance. The smallest size of the character distinguishable at the standard distance would thus be a measure of the visual efficiency according to the usual procedure. In one group of natives there were two thirds who had vision between two and three times what is commonly supposed to be normal European vision. This conclusion must be somewhat modified in view of the difficulty of obtaining precisely comparable European standards and in limiting the subjects to those presenting no decided refractive defects. Yet the balance of evidence is in favor of a slight superiority of the vision among 'Naturvölker' as compared with 'Culturvölker.' Bringing this into relation with the widely circulated reports of the marvelous visual powers of savages, Mr. Rivers decidedly agrees with those who interpret such proficiency as, in the main, a psychological one. It is because the savage in his limited world knows what to look for, that he is able to recognize objects at a greater distance; and when the European attains an equal familiarity with the environment he is likewise able to observe what previously passed his closest scrutiny. Mr. Rivers cites a case in point from Ranke who was astonished that the Indians (of South America) 'could tell the sex of a deer at a distance which would have implied vision at an extremely small angle if the distinction had depended on seeing the antlers,' but who found that he could make the like distinction

when once he had noticed the characteristic difference of the gait in the two sexes. Likewise Mr. Rivers' Papuans, though they possessed a superior vision, yet detected the presence of a steamer in a neighboring harbor mainly by knowing what to look for at so great a distance. A few supplementary results may add interest to this general conclusion. It appears that the women had as good vision as the men, that decline of vision seemed to set in at an earlier age among the Torres Strait natives (æt. 35) than among Europeans (æt. 50), and that they, furthermore, did not exhibit the rapid improvement with a given test which is a common observation among Europeans. Myopia was distinctly less common than among Europeans, and this alone would account for an average superiority of visual acuteness. It appeared, too, that the natives could see more clearly with feeble illumination and were able to distinguish the faint gray rings produced by slight black patches on a rotating white disc (Masson's discs) better than Europeans.

Mr. Rivers' examinations of the color sense were quite extensive and included some very interesting notes on the color vocabulary in the several native languages. The relative absence of the typical form of color blindness (confusion of reds with greens) among the people examined corroborates the result found by others, that color blindness of this type is distinctly more prevalent among European peoples. Mr. Rivers gives strong reasons for concluding that his subjects exhibited a certain degree of insensitiveness to blue (and possibly green) as compared with Europeans. The result, in a measure, strengthens Gladstone's contention of the relatively late introduction of blue in the color evolution of the race, but it gives that conclusion a different and far more rational setting. A third group of visual experiments related to the space perceptions and the sensitiveness to certain common illusions of length and direction comparisons. Here a brief résumé is hardly possible, but suggestions of interest are the following: the well-known Mueller-Lyer illusion (of the apparent greater length of a line having divergent pairs of oblique lines at its

extremities, like the feathering of an arrow, above an equal line with convergent oblique terminations) is distinctly less marked to the Torres Strait natives than to Europeans; the former are relatively less variable among themselves in judgments of this type than a comparable group of Europeans; several other illusions involving interpretative factors were less marked than they would be to Europeans, while a few that depended upon the physiological shortcomings of the eye seemed on the whole more obvious than to uninstructed Europeans.

Many of these suggestions offer tangible points of corroboration or the opposite, of general notions as to the effect of civilization upon the sensory endowment of man. Mr. Rivers throws out the pertinent thought that a superiority of minute sensory observation may well be the characteristic of the more primitive mind, and that this form of excellence may be prejudicial to the more general use of the senses as the servants of the judgment and associative interpretation upon which education depends. He suggests that the less marked sensitiveness of his subjects to certain illusions may be an evidence of this, since they see only the parts and not the whole; and it is the conception of the geometric figures as a whole that brings in the contrast upon which the illusion depends. "If too much energy is expended on the sensory foundations, it is natural that the intellectual superstructure should suffer. It seems possible that the overdevelopment of the sensory side of the mental life may help to account for another characteristic of the savage mind. There is, I think, little doubt that the uncivilized man does not take the same æsthetic interest in nature that is found among civilized peoples." And this, according to Ranke, is due to the savage absorption in the useful details of nature and his consequent inability to see the larger relations. "Ranke's experience is strongly in favor of the view that the predominant attention of the savage to concrete things around him may act as an obstacle to higher mental development."

We are as yet far from an adequate view of the essential transformation of the psycholog-

ical equipment that has been concomitant with the transition from primitive to civilized conditions. It is equally certain that many of the current notions as to the likenesses and differences of 'Naturvölker' and 'Culturvölker' rest upon presuppositions rather than upon proper observation. Such researches as this of Mr. Rivers bear the possibility of clarifying our views as to these interesting relations.

JOSEPH JASTROW.

MADISON, WISCONSIN.

Monograph of the Coccidæ of the British Isles.

By ROBERT NEWSTEAD. London, Ray Society, 1901.* Vol. I. Pp. 220, Pls. A-E, and I.-XXXIV.

This is the first comprehensive work on the British Coccidæ and is the result of over ten years' study by the author, who is the foremost authority on scale insects in England. The term 'British' is permitted to have a very elastic meaning, since all species found living in Britain are included—even those on hothouse plants and on fruits in the market. Thus, the *Diaspis* of cacti is duly given a place, though nobody would think of treating the cacti themselves as members of the British flora. Indeed, of the thirty-eight species discussed in the volume, only six are genuine natives of the country. This peculiar interpretation of the term 'British' is wholly justifiable when we consider the fact that many of the most injurious coccids are those which have been introduced, and indeed those most commonly met with are found in hothouses on imported plants. If Mr. Newstead had confined his researches to the indigenous species, his volume would have been of comparatively small practical value to the British coccidologist or horticulturist; and as the mode of occurrence of each is precisely stated there need be no confusion. Of the thirty-eight species, no less than thirty-one have also been taken in America, so it will readily be seen that the work is of much importance to us in this country. Every species is carefully described, and there are beautiful colored plates of most, as well as line drawings illustrating the minute structural characters. Biological facts

* It may be useful to state that the actual date of publication was the middle of December, 1901.

of the greatest interest are recorded. The genus *Aulacaspis*, of the present writer, is accepted, but defined by entirely new characters. It results from this that it includes a quite different series of species from those hitherto referred to it, except, of course, that the type species (*A. rosæ*) remains as before. I find, upon renewed study, that this new interpretation is apparently correct, and it marks a considerable advance in classification. *Aulacaspis* is now seen to be an Old World genus, while *Diaspis* is mainly American.

The common mussel-scale of the orange is referred to *Mytilaspis pinnæformis*, but I think incorrectly. The insect of this name occurs on orchids, while that of the orange (*M. beckii*) has never been seen by me on these plants, though it might be common on orange trees with plenty of orchids growing near, as is the case in Jamaica. We have to do, perhaps, with a case of 'physiological species,' and there is an opportunity for some one to try experiments in transferring the coccids from one plant to another.

Altogether, the work is a very admirable one. The only serious fault I find is that the author has not taken sufficient pains to examine the literature of his subject. Thus, he often quotes Cooley's paper on *Chionaspis*, and yet failed to learn from it that the so-called *C. salicis* of this country is not identical with the European species. The statements about the exotic distribution of the species are frequently incomplete, and sometimes inaccurate. In several cases, names are cited in the synonymy which were never printed in the places cited; thus Leonardi wrote *Aspidiotus (Selenaspis) articulatus*, but Newstead cites it *Selenaspis articulatus*, treating the subgenus as a genus in the synonymy, though he himself regards it as only a subgenus.

T. D. A. COCKERELL.

EAST LAS VEGAS, N. M.

SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES.

SECTION OF GEOLOGY AND MINERALOGY.

THE regular meeting of the Section was held Monday evening, March 17, with Dr. A.